MISSOURI BOTANICAL GARDEN

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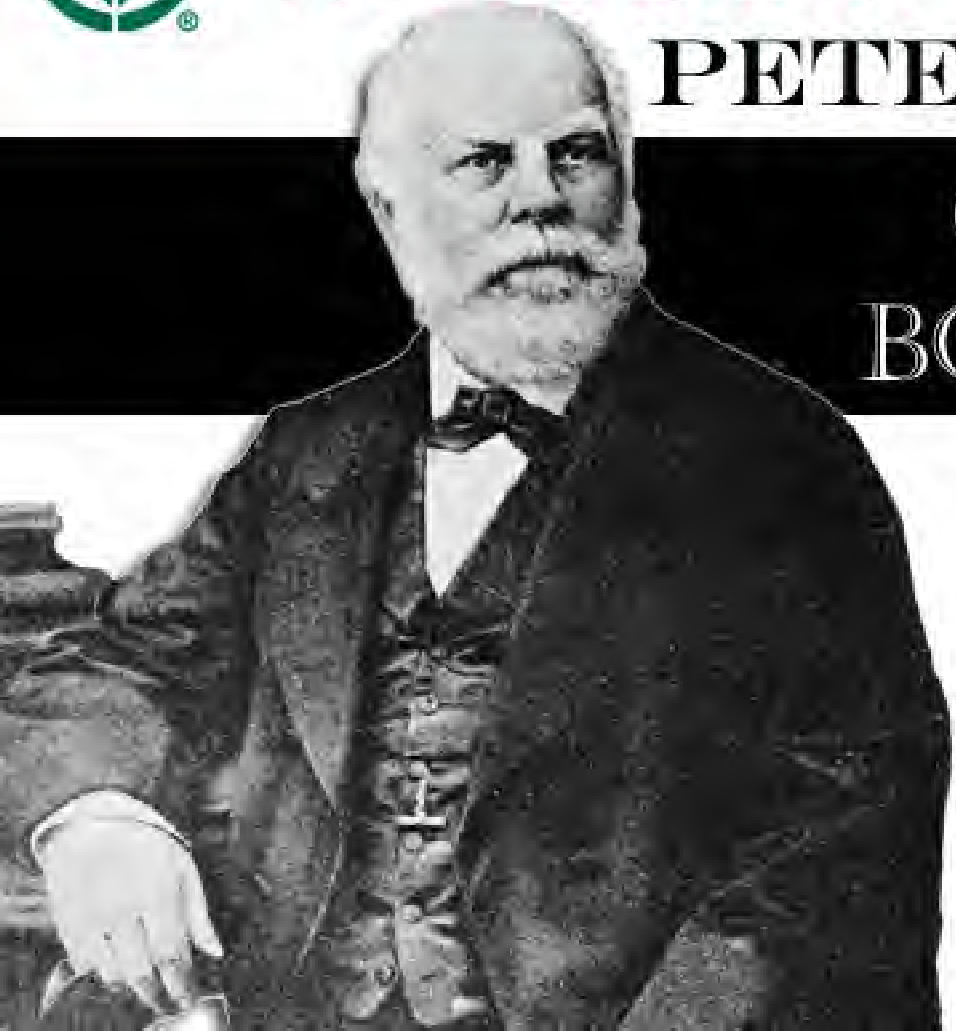

GEORGE ENGELMANN BOTANICAL NOTEBOOKS

Pagination Note:
Since many of the items lack a specific page number, the page number displayed online refers to the sequentially created number each item was given upon cataloging the materials.

Pinus ponderosa Lemmon 1879

Stomata 7-8 rows on each side above ; 16 rows below

P. Jeffreyi Lemmon 1879

4-5 —— 8 ——

P. Jeffreyi Mount Raymond Boland

3-4 8

Assistant Secretary.

12039

Mr. G. Engelmann
3003 Locust st
St Louis
Mo.

2 × (4–5) [illegible]
8 [illegible]
[illegible]
tines of st
2 × 7–8 [illegible]
16
3–4
8
[illegible]
Reg

March 5 1879 ~ from Carrière

Pinus ponderosa Dougl in Loud Arb. 4. 2243 – tree 100 feet
leaves 4–10 inches, cones 3–4½ inches long – mucronate points straight
or slightly curved – seeds 3½ lines long. **Oregon**
[Probably including the California forms]
Endlicher says after Loudon. 3-leaved; cones 3 inches –
transverse ridge of scales very strong

Pinus Benthamiana Hartw. leaves 3, 5–8 inches 150–200 high
cones 3–5 inches – Pulvilli of the leaf bases remaining long very marked
Mountains of Santa Cruz. seeds broad triangular. 3 lines long

P. Jeffreyi Hort Laws. Cat. seeds 5–6 lines long; spotted.

P. Beardsleyi Hort. Laws. Cat seeds triangular, 2½ lines long;

P. Mcintoshiana Hort Laws Cat seeds 2 l. long. dark

—

Parlatore

2 393. P. Jeffreyi Murr. a -- leaves. 6–8." cones 6–7"
395 P. ponderosa Dougl (Syn Beardleyi Murr, Benthamiana Hartw.
P. Parryana Gord.) leaves 6–8 inches long
cones 4–4½ inches long. – ♂ 1–1½ inches long

ponder. seeds 2–3½ lines long
Jeffr. ~~[illegible]~~ 5–6 l. long

Auf das Jahr, das nun geſchwunden, blickt heut' Mancher trüb' zurück,
Grollend, weil es ihm nicht brachte das in ihm erhoffte Glück;
Mit vermehrtem Muth beginne er den Kampf im neuen Jahr —
Unterliegen muß im Kampfe, wer zurückſchreckt vor Gefahr.
„Kämpfen, Ringen!“ iſt die Loſung, nur wer kämpft, gelangt an's Ziel,
Wer geſtählt im Lebenskampfe, der gewinnt das ſchwerſte Spiel.
Darum ſei dem „Neunundſiebzig“ ein Willkommen heut gebracht:
Was auch unerreicht geblieben Achtzehnhundert ſiebzig acht
Finde die erſehnte Löſung in des neuen Jahres Lauf —
Jedem wackern Streben gelte dieſes herzliche Glückauf!

nd Heil

n

Jahre!

Juli.

Sonnt.	Mont.	Dienſt.	Mittw.	Donn.	Freitag	Samſt.
...	...	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	..	..
...	...	...	...	...	...	...

Auguſt.

Sonnt.	Mont.	Dienſt.	Mittw.	Donn.	Freitag	Samſt.
...	...	...	...	...	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	...	...	...	...	...	...

September.

Sonnt.	Mont.	Dienſt.	Mittw.	Donn.	Freitag	Samſt.
...	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	...	...	..	.
...	...	...	...	...	...	..

October.

Sonnt.	Mont.	Dienſt.	Mittw.	Donn.	Freitag	Samſt.
...	...	...	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	...
...	...	...	...	...	...	...

November.

Sonnt.	Mont.	Dienſt.	Mittw.	Donn.	Freitag	Samſt.
..	...	...	...	...	...	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	...	...	...	...	...	...

December.

Sonnt.	Mont.	Dienſt.	Mittw.	Donn.	Freitag	Samſt.
...	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	...	...	..
...	...	...	...	...	...	...

12040

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Pinus ponderosa
Jeffreyi
"Cone from Oregon" Bolander sub
Sierra Valley — Lemmon
Mt Raymond — Bolander

Brewers 1914 July 20 1863 Stanislaus River^{2}
San Bernardino sub no defflor, Parry.
Rothrock 214 and 251
at Clarks, Bolander

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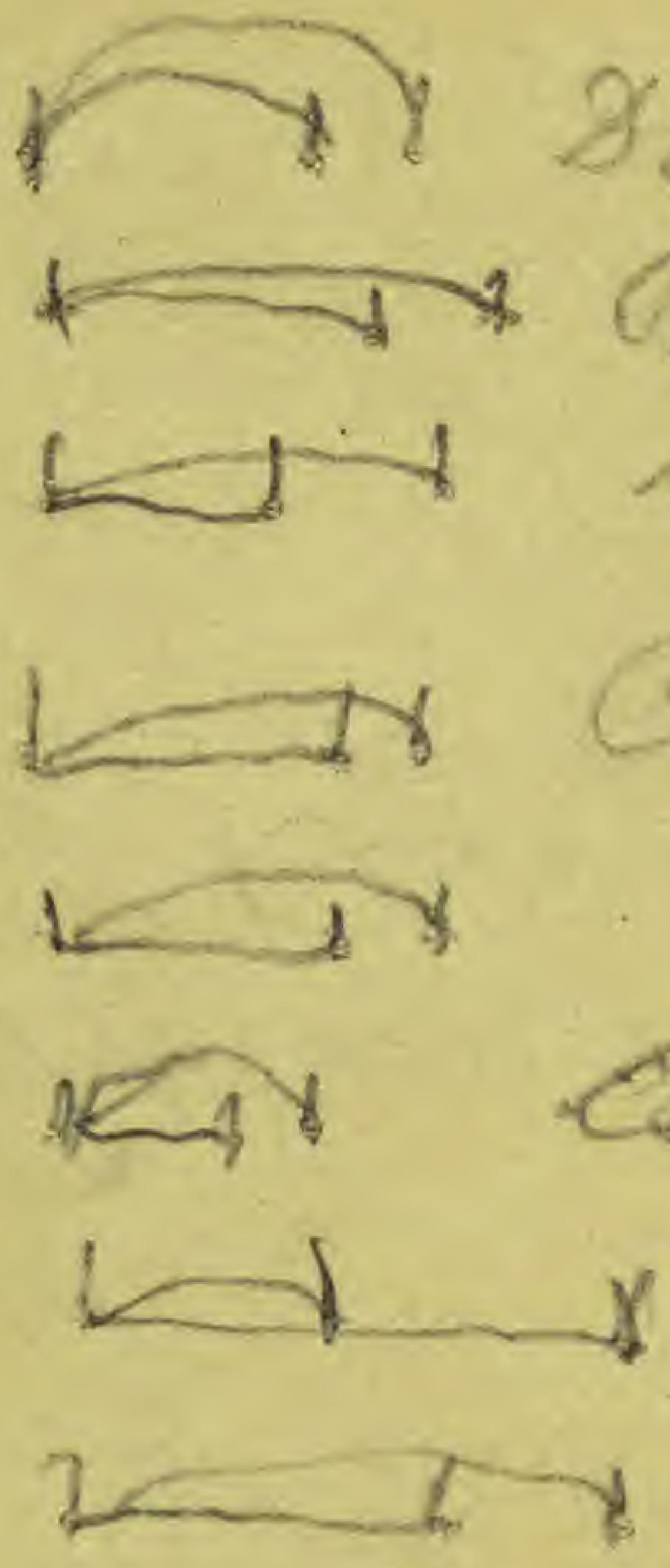
REMOVED TO 2934 OLIVE STREET.

Geo. B. Frese
DRUGGIST & PHARMACIST
NEAR 3005 OLIVE ST. GARRISON AVE.
ST. LOUIS, MO.

DR. GEO. J. ENGELMAN,
Office, 203 S. Fifth Street, Residence, 3003 Locust Street.

12041

Pin. ponderosa March 12 1879



Douglas	Oregon	4	× 2	8
Bendire	Oregon	4-5		8-10
Lyall	Oregon	3-5		6-8
Colorado	3 leaves	5-6		10-12
"	2-leaves	(7-8)		7-8
Californ,	Lemmon	7		13-14
Jeffreyi	Lemmon	4		8
"	Bolander	4		8

distance of rows of stomata × 60 on convex side of leaf

number of rows of stom.

on one of the upper sides

on whole upper surface

Bonapartea — but still a few flowers —

Yrs truly
H Shaw

T Grove
(Dec 23/78

12042

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P. ponderosa   Lemmon Jan 1879
mis. fresh

foliage deep green
young branchlets reddish brown
sheathes of leaves browner lowest carinate
lateral pair of scales broad, acute not longer
than diameter of leafbunch – sheath 8-9'' old 3'''
leaves always in 3s persistent 3 years 7½-9½ inch long
deep green, apparently smoother (rarely upon 4)
young cone of last spring 10''' long on pedicel 3''' long
turbinate-bilateral
scales less than 200 in 13/21 or 21/34 order,
mucros spreading and slightly
curved upward —

Old cone 3¾ inches long, ovoid triangular

irregularly rhomboid apophysis ~~with~~
protruded below with slighter transverse
ridge, near the upper rounded edge
stouter mucros curved upwards

N

12043

26

27

28

{30
15

25
15

meat 1.65
veg 45
20 65

470.35
283.80
~~180~~186.55
175

m 45
g 45
Ch 85
175

30. m. 1.35
v 25
20
~~1.80~~

Miss COMSTOCK'S

ENGLISH, FRENCH AND GERMAN

Boarding and Day School,

Nos. 32 & 34 West Fortieth St., near Fifth Ave.,

Murray Hill, opposite Reservoir Park, New York.

235
180
230
0.45
50

47
25 45
12 50
85

Guadalupe Island
Cones scales 21/34
Both
3 most prominent
smaller [illegible] 3–5 inner
[illegible] 18–20 4–6 species
central [illegible] shorter [illegible]
crest

28 Min 67 Max (89) 81

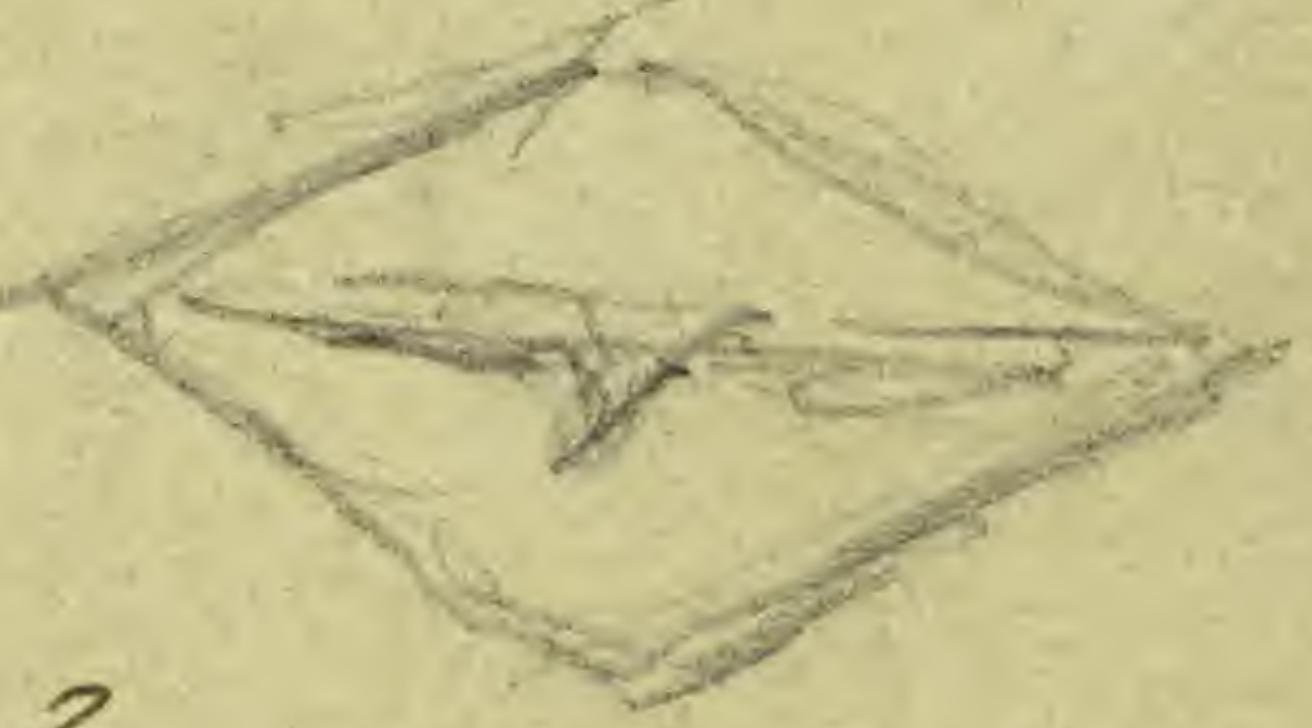
P. Jeffreyi   Lemmon mis Jan 1879
fresh

foliage glaucous to yellowish at last
young branchlets reddish glaucous
sheaths of leaves paler, lowest lateral pair of scales long acuminate, ~~much~~ longer than ~~thick~~ diameter of leafbunch — sheath 8–9 lin. old ^{3}5–6 lin

Leaves always 3s, (persistent 2 years or more?) 7½ to 9½ inches

young Cone of last spring 1¾ inch on a pedicel ¾ inch long about 300 or more scales — $\frac{34}{55}$, mucros spreading & slightly curved upward

Old cone 7–8 inches long
rhombic apophysis with strong very prominent transverse ridge in middle; mucro small, sharp, recurved.



Has this light or black bark? Is it the Black Bull or Swamp Pine? beautiful symmetrical conical growth — black scaled twigs — blackish, finely broken bark — Cones medium — Invariably near streams 4–6000 ft high —

Another form is found in high altitudes, clothed 6 or 8 feet with long leaves (8–13 inches) — few large ascending limbs — cones very large, young tree glaucous light green — bark yellowish.

2. C. Arthur, Iowa, wants to know what his 53 is

San Diego Lyceum   my publications (Academy?)

Farlow	recd April 22
Newberry	~~April~~ 5 1875
Hagg	April 28 "
Buchenau	March 6 "
~~Varrentrapp~~	~~" 23 "~~
Ravenel	Nov 19 1873
Guedenay	Jan 9 1870
Lesquereux	May 2 1876
Vasey	April 7 etc -
~~Haage & Schmidt.~~	Dec 31 '75
~~Engelmann~~	~~Mai 29 '76~~
Parlatore	14 Jan 1874
Parkinje	7 April 76
Regel	21 Mai
~~Sargent~~	~~29 Jan~~
Soc. Belgique	-
Debary	Dec '75
Caruel	July 16 '75
Crepin	Sept 21 -
Boelger	Nov 5 -
Pfersdorf	Nov 27 -
Gillman	Dec 7 -
Chapman	July 12 -
Roetter	
Dr Schneck	Dec 29 1875

12044

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P. S. The Arceuthobi Americana on P. contorta I collected in upper Yo-Semite Aug 24 '78.

Have followed up your observations on leaf anatomy with microscope this winter. How long, what good characters, beautiful and invariable! Have guessed that your name concolor is given because white bands of stomata are always found on both sides. Am I right? Yes Have no spec. of sub-alpina, grandis nobilis & bracteata. Would like some, much to study {next winter, if I remain at home.}

Sierra Val. Cal. Feb. 18. '79.

mailed Loyalton Febr 22d
Sierra Co, Cal

Recd Febr 28th
Ans March 4

My dear Dr.

Have just returned from a a long day's ride ~~ride~~ and clamber among the trees getting specimens and items for you.

This winter I did not hybernate at Webber lake — as formerly 2 winters — but remained down here in my herbarium. Have not been able to go up to W. this winter — too soft snow. Our snow-shoes cannot slide over soft snow. Several persons who have attempted trips over the snow in this condition have suffered much, often perishing. But I have done the next best thing. I have visited the forests about Sierra valley, taking notes and to-day I came home laden with boughs. To-morrow I will make a selection of characteristic specimens, put them in heavy papers & forward. I have no doubt that during this fine cool weather they will arrive in tip-top condition.

Please take note that these specimens all come from trees located on the west side of Sierra valley, in Lon. 120° 25' by Lat. 39.35' Alt. 4.326 ft.

12045

Answers to Questions on Pinus Contorta,

1st "Do the cones of the season grow always on the apex of the branch, or also laterally?"

Ans. Both — (see spec.) but generally terminal. **yes!**

2nd "Do the cones always open immediately on maturing, or do many of them remain closed longer or shorter?"

Ans. Some of the trees seem to shed all their fruit at maturity — in Oct. — all the scales of their cones becoming reversed, and generally falling soon after, (as see Cone marked "A" gathered a few years ago at Webber L.) The cones of other trees will open only partially on one side — the out-side of the curve, a few seed fall out, the cone persists and when the winter rains come, the scales ~~all~~ close up again, always, in all pines! These are the sort that persist for years. To-day I noticed some, 4 or 5 yrs. old on limbs, 2 inches thick (the limbs) & 6 feet from the end.

I know that nutritious (but whether germinative or not, I do not know) seed remain in these ~~cones~~ over the first winter; 1st from examination of cones (as you can do) 2nd from the practice of squirrels, of cutting off twigs and harvesting the cones. I send the denuded rachis of several cones found to-day freshly removed from twigs just let down upon new-fallen snow, marked "B". 3rd. At Webber each year a flock of Cross-bills (curvirostra) of 13 to 22 lived in the grove all winter chirping and working in the trees — (only P. contorta for miles around,) and I would find the snow beneath occasionally dusted with broken wings of the seed. They must have been feeding upon these belated or immature seeds. Snow 6 to 20 feet.

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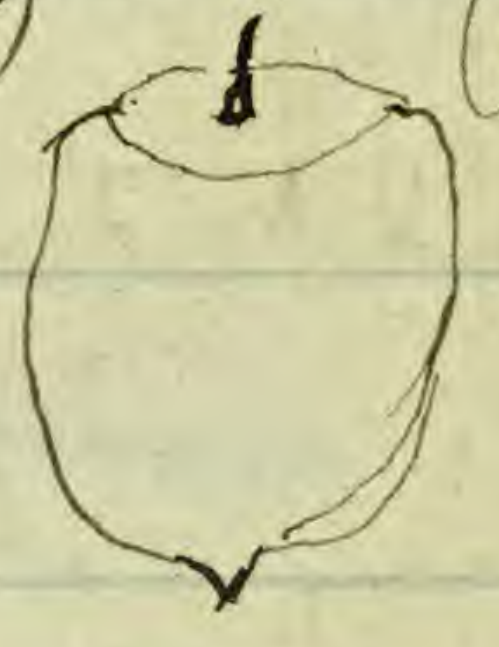
3rd "Do the cones fall soon after maturity, or at least by spring, or do they remain attached for many yrs.?"

Ans. Much of this answered in preceding. I will in this connection make a general statement. My somewhat extended exploration & observation leads me to conclude that there is a permanent distinction between the 5-leaved section of pines and the rest in this particular: persistence of cones.

The 5-leaved pines perfect their cones & shed them in the fall, with few exceptions; the rest very generally retain a part of their cones, apparently undeveloped ones, for 2 to several years, notably the *P. tuberculata*. Of the 3-leaved & 2-leaved pine some trees will perfect their cones of large size and drop them in autumn. The scales will be more numerous, and very firmly repressed at maturity, giving the cone this quadrangular shape in outline:—



ordinarily the scales at maturity stand out perpendicular to the radius mostly, but towards the apex, ascending giving the form of a true cone; like a pine-apple.

too Coarse generalization!
better state only facts

4th "About *Pinus ponderosa* & its varieties, Can you distinguish?"

Ans. No, & Yes. Cannot always draw the line of demarkation between them. Have examined log-yards by saw mills, taken experts in timber with me into the forests, the latter often very confident at first but soon owning their confusion. When manufacturing a tree into lumber it is easily distinguished as "Yellow" or "pitch", but not before. The trees bearing these two names afford our principal lumber wealth. They are yellowish-barked, 12046. 3

How long do leaves persist in each form?

broken into large sections. on large trees from 3 & 5 feet long by half as wide. the limbs are few, short, crooked and generally alive only at a distance from the ground on the trunk. Lvs. dark apple-green short 4 to 6 inches, tufted at the ends of ~~small~~ narrow crooked twigs. Cones very variable. from 3 to 9 inches long and exhibiting all degrees of spreading.

When the timber beneath the sapwood of these trees proves to be yellowish, soft & valuable. the tree is a "yellow pine" "I knew it at a glance at the bark." "I told you so" &c, from the tree sharps. If the center is dark, pitchy, brittle, less valuable. "Why that's a pitch pine, of course", I told you so" &c. Is this the typical ponderosa?

Before leaving this ~~form~~ subject of ponderosa I wish to speak of other characters. ~~Specimens are~~ Another variety is found in high altitudes bearing but few large, nearly straight, ascending limbs clothed for a long way 6 to 8 feet with long lvs. 8 to 13 inches. persistent for ~~several~~ years, that is, there will be representatives of several yrs. A specimen branch of such a tree even 3 feet of the ~~terminal~~ part would weigh 6 to 10 lbs. they are so robust. the yearly portion being often over an inch thick. I could not get one now without much trouble. The cones are usually very large with scales moderately spread. Lvs. of young trees often glaucous. light green. These trees when large are very striking with their symmetrical plumed branches & few large divergent cones in 2s or 3s. and I dont wonder that the maximum forms if such were sent to Eng. caused the belief that the spec. was distinct. What variety is this? Jeffreyi? I dont know about its timber, whether "yellow." or "pitch". Bark yellowish as above.

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4

Jeffreyi ? ?

(Benthamiana?)

Another variety here enjoys the vernacular names of "black", "swamp", "pitch" & "bull". These are in general, very symmetrical & beautiful, heavily-foliaged trees, fusiform or even perfectly conical in outline, the lowest limbs being the longest, and these forms occur in mid-forest, even. These are very numerous (I've counted 360 live body limbs on a tree 150 ft. high.) but small and ascending with black-scaled twigs, tufted at the ends with short, (for the species,) narrow lvs.

The bark is blackish, finely broken, into irregular sections 3 & 5 inches long & half as wide. Cones medium or often variable. Timber little prized, the white sap-wood very wet & soft, grains interlaced, hard to split; the center generally pitchy, dark & brittle.

These trees are I believe, invariably found near streams or on wet flats at about the elevation of 4,000 & 5000 ft.

Is the above Benthamiana? Now what are these forms? & which is the typical ponderosa? ?

One of my greatest puzzles is in regard to the appearance of our young groves of ponderosa. Two distinct colors accompanied by wide differences of form are often seen in them. a) Certain little trees will present the general appearance of the species; dark-green, shortish lvs. tufted on the ends of slightly straggling, narrow branches; b) Other trees have glaucous, lighter, longer, thicker lvs. tufting and pluming for several feet, fewer, larger, nearly straight, regularly inserted limbs. I cannot detect in standing trees these differences in mature trees, that is, I have not the time to frequent the forest when people are cutting &c. While at Tahoe with Hooker & Gray these phenomena were much talked of &

5

12047

hundreds of trees examined, I dont know the result in their minds. It may be that a distinct var. is coming on to be detected by an Engelmann of a hundred years hence.

I send samples of contorta, twigs, fresh squirrel-eaten cones, one old wide-spread cone from Webber L. &c, also two bearing twigs of ponderosa. the smaller one from com. small-coned form, the larger, with cones beneath the tree 8 & 9 inches long, scales recurved more or less. limbs few, larger approaching the splendid, alpine, plume-limbed form, described.

Also a section of bark with a few grains of sap-wood of the big contorta tree a section of which I sent to Cent. Ex, Heighth 12.2 ft. dia. 6 ft. age 294 yrs. body limbs 268.

Now Dr. I hope these specimens & notes will serve you so that you will not be obliged to write $2 ? ? per letter, often in future. oh!

Have I not sent you spec. of Hollisteria? Only a few left. Am very busy & badly overworked trying to make botany pay by putting up ten sets of plants for sale. Only 4 of them ordered yet. The task of taking out, selecting, putting in papers, writing 10 labels each, is very close & laborious. I fear I shall have to suspend. Am not 1/3 done & been at it nearly two months. Snow going off. Mud 18 inches deep. Spring opening. I expect a free pass from the R. R. officials soon (by kindness of Dr. Gray & friends at S. F.) so must prepare soon to be off. in meantime must canvass for microscopes to keep from starving. Very, very tired & over-taxed. Please excuse errors & incoherence.

Yours faithfully. J. G. Lemmon.

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Rec'd Febr 28

Sierra Valley Febr 20' 1879

P. S.

Two day's after.

After a night's rest I concluded to search again in behalf of science, so for two days more I have been climbing and hunting, the snow & mud very troublesome, and I return so tired that I can scarcely think, The mail & express go in the morning so I have to fix up my green spec. for you at once — tired as I am.

I have so much now that I change plan & send a box by express, I have had to fix it up as best I could in the night but I trust that its contents will please you.

I have traveled far these two days mostly on foot in search of cedars and their par-

12048

asites, There are none in all this region that are infested with the Phorad Arceuthobium libocedri.

I sent you good spec. in fruit years ago gathered near Lassen's peak. 70 miles north of here, dont you remember them? only ♀ yes Coll Oct 1875 (Sierra Vly Nov 75 Cabot by me). Parry San Bern only ♀

I have not been in the vicinity since, and know of no other locality for it.

I had an idea that I had seen some near here, years ago before I commenced collecting, but diligent search among hundreds of trees fails to discover it.

Next after the Libocedri hunt I have been looking up the vars. of Pinus ponderosa.

I have enclosed for you several characteristic spec. which you will have no trouble in matching.

There is but the two varieties of ponderosa called "yellow" & "pitch" pine growing at this level, as I said.

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The snow is so soft that I can not go so high as Webber L. so have not that splendid mountaineer I wrote of (Jeffreyi?)

Now let me recall what is in the box & enumerate,

1. Spec. of contorta. bearing limb, & terminal shoot of a young tree, about 8 ft. high, more robust and short in the internodes than the average, an open cone of same (from Webber L.) and section of bark. (Centennial tree)

2. Spec. of 2 vars of ponderosa. 2 stubs of terminal stems of 2 young trees growing side by side about 12 feet high. with 2 side limbs of same, the one glaucous, with white leaf-scales & sheaths; the other brownish; each var. accompanied ~~with~~ by bearing limbs easily matched by color of leaf-bases &c,

No doubt one of these always produces the "yellow", the other the "pitch" pine, but only much search would tell, which from which.

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The bearing twigs of the glaucous var. I procured to-day from the top of a robust tree on the edge of the forest out alone, tree about 75 ft high, 3 ft. dia, limbs very symmetrical, in whorls, the phyllotaxy of the main trunk observable distinctly from the apex down to where the stem was over a foot thick, a most beautiful character of this var. Cortex very thin on this tree. ~~very~~ small sections, shallow cracks, the usual appearance of trees in open situations.

The large cone is from same tree,

" small " from the other var. of tree. The bearing twigs of this ~~other~~ or brownish var. are from a larger tree, cut down a few days ago and reduced to stove-wood. 200 yrs. old, timber soft yellowish with a few ft. of pitch in center at base — called by a lumberman "yellow", others equally as observing, call the white var. "yellow" but I could not cut the tree & so see.

3. Winter states of A. concolor, young & bearing; Libocedrus male & female, fls. Juniper with parasite, & with berries,

I must pre-pay charges, as you know, on such articles, and I hope they will be of such service together with these hurried notes, as to cause no regret for the labor expended. There, Dr. I must turn to a still harder task, selecting & packing plants "for bread & butter".

Wearily but faithfully J. G. Lemmon.